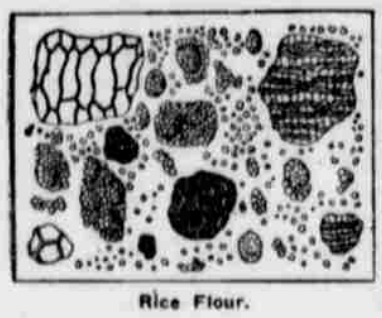
SCIENCE AND INVENTION.

MICROSCOPE AS DETECTIVE.

A Most Effective Agent to Reveal Adulterations in Food.

The miscroscope is becoming more and more a commercial tool. Its value in the recognition of adulterated vegetable substances, especially foods, in the shape of fine powder, is very great. This appears clearly from an article contributed to the Revue Scientifique by Eugene Collin. This writer points out that the growing custom of buying certain products in the state of powder, which compels merchants to procure substances in this state, has given rise to the new industry of pulverization, whose exploiters, in order to make use of their personnel and plant, are now furnishing in pulverized form a host of natural products that were formerly sold only whole. Nothing, he remarks, could better serve the interests of the adulterators than the development of this business.

The detection of fraud in cases of this kind must evidently be made



Rice Flour.

by chemical methods. Chemistry, the writer goes on to say, enables us to prove the presence of certain well-defined organic compounds such as gluten in flour, quinin in cinchona, caffein in tea, etc., but generally it is able to give no precise indication of the nature of the various mixtures that we may wish to test. Microscopy is thus the more delicate method, and

Anatomical Elements of Wheat Flour.

it has been greatly facilitated by the observations and experiments of scientific men during the past 50 years on the anatomical structure of various vegetable products. The writer continues:

"The microscopic determination of a vegetable powder demands of an analyst a profound knowledge of all the anatomical elements composing the vegetable organ that furnished this powder. It is not enough to know the characteristics of the organ as seen in a transverse section. These, which are generally the only ones mentioned in the courts, the magazines, and the various treatises, may be useful in recognizing vegetable debris that may be cut with a knife but they are quite insufficient for the examination of a powder, whether coarse or fine, in which the elements * * * rarely show a cross-section, but usually appear in tangential or longitudinal section. To know these it is absolutely necessary to have seen them and compared them with preparations similarly made from the vegetable organ supposed to be the source of the powder under examination. * * * For one familiar with this kind of observation it is extremely easy to say whether a vegetable powder comes from a root, a bark, a seed, or a leaf; the difficulty is greater when the exact botanical origin is required. * * *

Wheat Grain: Cross-Section.

"When seeds are pulverized while still covered with all their envelopes, the determinative elements are made up especially of the debris of their various teguments. Thus pepper, the most important and valuable of our spices, and also that which has most excited the cupidity of the authorities * * * is sufficiently characterized by the debris of its kernel and the nature of the constituent starch-grains, but the precise evidence furnished by the fragments of the various envelops enable us to tell whether the powdered pepper has been prepared from the kernel alone, like the fine Cerebos pepper, or with the partly decorticated seed, as in white pepper, or with the whole grain, as in the black pepper."

ELECTRIC SUNBURN.

Effect Upon the Skin of Powerful Radiations from Electric Currents.

Cases of injury from exposure to intense radiations are becoming more common as a source of such radiation are more numerous. Not long ago the sun itself was practically the only source of the kind; now, not to speak of such forms of radiation as the X-rays and that due to radioactivity, we have many powerful sources of light, such as the various types of electric arc, that are able to do injury when their intensity is great. We quote from a note on this subject from Cosmos. Says this paper:

"On board a cruiser recently under repair at Portsmouth, England, it became necessary to make a hole in the shutter of a turret. The mechanical processes commonly employed for work of this kind are so slow that an officer asked permission to melt the hole by using the electric arc. . . . This operation, although well known, attracted many curious spectators, from the captain down to the sailors. All went well, and the solid steel, under the action of the current, flowed like melted glass.

"But on the morrow every one who had witnessed the operation was either half-blinded or horribly burned. The officer who had directed the work had the skin of his face completely scorched and of a deep copper color; it gave off a serous liquid like that from a burn. Several sailors who were at some distance from the turret had their vision so affected that they were sent to the hospital, and it was feared that they might lose their sight.

"The electric arc, rich in chemical rays, especially when it is formed between certain metals, may produce, as we have seen above, results of the same kind. Hence the necessity of protection during exposure to a powerful arc or to a mercury vapor lamp in quartz glass. The ordinary glass used in the Cooper-Hewitt mercury lamps absorbs the dangerous chemical rays to a sufficient degree. If one has not the advantage of being a negro, it is necessary to cover the face and hands with appropriate mask and gloves. In any case such intense sources of light must not be looked at directly unless the eyes are protected by colored glass."

In the Rush Lunchroom.

"Did yeou hear that, Silas?" queried Mrs. Ryetop, as she ate her pumpkin pie with the sugar tongs. "The man at this table called for floats and the other man called for sinkers."

"Floats and sinkers," echoed Mr. Ryetop, in surprise. "By gosh, I reckon next they will call for fishing lines."—Chicago Daily News.

How to De-Magnetize a Watch.

Hang the watch to a string and twist the string so as to rotate the watch rapidly near the pole of a strong magnet. While it is whirling, gradually take it away from the magnet. This will produce the desired effect, says a correspondent in Southern Machinery.

The method used for de-magnetizing with alternating current consists of a coil of wire with a hole in the center large enough to admit a watch, the coil being connected to a source of alternating current, and when the watch is dropped in and pulled out, it is de-magnetized.

The Pessimist.

"The highest clouds are only ten miles from the earth's surface, and are composed of minute particles of ice," said the professor.

"And those are the farthest away, are they?" asked the sour-looking man.

"Yes; why?"

"Oh, I always thought the clouds with the silver lining were the farthest off."—Yonkers Statesman.

Gives Poetry for Poultry.

Evansville, Ind.—A chicken thief broke into the henhouse of James B. Elmore, carried off half a dozen chickens and tacked on the door a paper with the following verse:

Christmas time is drawing near;
Thought I'd get my chickens here.

Elmore is one of the largest poultry raisers in Indiana.

Finance.

"He's one of your milk-and-water fellows, that chap Streeter."

"You surprise me. He seems such a rugged character."

"Understand me. I mean that when he takes a property to finance, he milks it first and then waters it."—Puck.

Not Worrying.

Mrs. Yeast—Did your husband get nervous over the late trouble in Wall street?

Mrs. Crimsonbeak—Not a particle.

"Did he attempt to draw anything?"

"Why, he didn't even try to draw a sober breath!"—Yonkers Statesman.

PET DOGS CHECKED IN HOTELS.

Careful Provision Made for Their Comfort.

New York.—With the growth of the large hotels and restaurants in popularity for small and informal social gatherings, especially teas and luncheons, official recognition has been given in these places to society's dogs, and provision has been made for their comfort and also for their safety.

Many women make it a practice to drop into these places with friends in the afternoon, some of them with dogs. In such a case the dog cannot be ignored. He has been out for his accustomed spin in a carriage or automobile, and he is always a well-bred dog. At the hotel he can be checked the same as a coat or umbrella is checked, and this is what is done with him. Waiting patiently at the stand he is always complimented upon his dignified bearing, which, whether he be collie, bulldog, fox terrier or toy bull, is as if he realized he had a reputation to maintain.

Kennels below stairs for dogs are also kept at all of the larger places, such as Sherry's, Cafe Martin, the Waldorf-Astoria, the St. Regis, the Plaza and the Hotel Astor. There the dog can be thoroughly comfortable during the long luncheon or dinner of his owner, and he is always under the eye of an expert in the care of animals.

GETS LIVING FROM THE WIND.

Buffington, Ind., Man Collects Cement Dust and Molds It Into Blocks.

Chicago.—John Kelly of Buffington, Ind., once was a truck farmer, making a bare living. Now he is an opulent manufacturer of cement blocks with an income of $25 and little outlay.

All this is due to the fact that the wind happens to be blowing Kelly's way, and it is not an "ill wind" either.

Kelly's home is two blocks from the cement works of the Illinois Steel Company at Buffington, where a $3,000,000 plant grinds slag and converts it into Portland cement. When the wind blows off the lake clouds of cement-laden dust envelop the Kelly home and the Kelly truck farm.

The owner, in the hope of saving his garden greens, recently constructed an immense shield of the billboard type at the rear end of his lot, facing the cement plant. When the cement dust comes his way it strikes the board and falls in a pile at the base of the shield.

After that all that Kelly has to do is to scoop up some gravel, mix it with the cement and mold the mass into blocks, for which he finds a ready market.

MAXIM INVENTS MOTORITE.

New Explosive to Replace Steam and Gasoline in Driving Ships.

New York.—A new motive power known as "motorite," which is expected to revolutionize torpedoes and torpedo boats and possibly in the future replace steam as a motive power for ocean-going vessels, has been invented, it is announced by Hudson Maxim, the inventor. It is said that Mr. Maxim has already made extensive tests with models of torpedoes and torpedo boats and has notified the government of his invention. "Motorite," the new motive power which is the basis of the torpedo and torpedo boat, is said to be a combination of certain powerful explosives and by means of it torpedoes and torpedo boats are propelled through the water at great speed. Mr. Maxim says that an ordinary-sized torpedo can be sent through the water at a speed of 60 miles an hour, while the best of the present gasoline-driven projectiles do not travel faster than 35 miles an hour. Maxim's new model torpedo boat, which is practically submerged, can be propelled, the inventor says, at a rate of from 55 to 60 miles an hour.

STARTS FOREST FROM SEED.

Oklahoma Now Has 80,000 Catalpa Trees Growing on Sand Hills.

Pond Creek, Okla.—J. W. Bird's venture in starting a catalpa forest has proved very successful for the first year. He bought raw land in the sand hills just east of the town for his project and broke it up last winter and spring.

He planted about 300,000 seeds, expecting to get about one-fourth that number of plants. He now has between 80,000 and 100,000 vigorous, healthy young trees. Next spring he will transplant and if the trees come through the winter well expects to have about 80 acres in trees.

As an illustration of what remarkable growth the tree will make in this soil and climate Mr. Bird has in his office a tree cut by W. H. Farmer, who lives one mile from the former's catalpa farm. Last April Mr. Farmer cut back a two-year-old seedling, and since then the tree has made a growth of ten feet six inches.

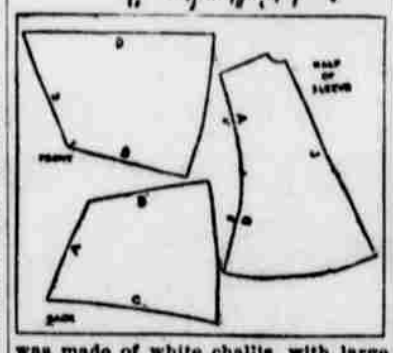
FOR COSY MOMENTS

SIMPLE BUT CHARMING LITTLE DRESSING SACQUE.

Dainty Garment Presents No Problems to the Home Dressmaker—Silk or Figured Challis the Best Material to Use.

As a rule matinees and breakfast jackets are difficult to copy. They have few lines to follow, it must be confessed, but their very shapelessness is rendered artistic only by the skill of a professional. In the accompanying sketch is shown a charming little dressing sacque, or matinee, which is the essence of simplicity and so easy to put together that it ought to prove a temptation to every woman to try to fashion one like it.

The material used may be of silk or figured challis. The one illustrated



was made of white challis, with large delicate pink roses scattered over it and stripes of pale blue forming a sort of trellis for the flowers. About four or four and a half yards are needed for an average size matinee made in this style. The back is in two pieces, with a bias seam down the center; the front is in two, while each sleeve is in one piece. To make the matinee, cut a piece of the material in the shape of the diagram marked with the letters D, E and B, laying D on the straight edge of the material. Then cut out another section like the one marked A B C, with the line B on the straight edge of the matetrial.

The diagram A J G shows only half of the kimono sleeve, the fold of the material coming on the side marked with the letter J. The dotted line forming a triangle on the shortest of the four sides of this piece shows how to shape the ends of the sleeve for the back. The front side is left like the pattern and the back sloped on the dotted line. In putting the matinee sections together great care must be taken to get them in the correct order. It is best to start with the backs and sew the bias seam running down the center. If the material is of fairly light weight this may be managed successfully by a French seam, but if it is at all heavy, then the seam should be covered with silk binding and pressed open.

The sleeve section forms the yoke both back and front, and for a certain distance it is joined to the back and front of the jacket, and then the two edges of the sleeves are put together to make the kimono effect. For example, A, which marks the top of the back joins A, the yoke end of the sleeve. These two pieces are sewn together to a distance marked by a line in the diagram. Then the other side of the sleeve, which is now shown in the cut, but which corresponds to A, is joined to the line designated E. This is the upper part of the front, and fits to the yoke part of the sleeve. When the yoke is sewn to both backs and fronts there should be the same length of material left at G, and its corresponding side of the sleeve.

Pale blue ribbon was used for the matinee finish in the above sketch, but any color may be chosen to harmonize with the prevailing shade of the material. Dainty lavender and white matinees made after this style sometimes have lavender ribbon scallops, and again they are finished with white.

BRIDAL TRAINS AND VEILS.

Princess and Empire Models Most in Favor This Year.

Very long and full and extremely graceful is the wedding train of the present year. The princess and empire models are about equally in favor just now, while court trains, separate from the dress itself and falling gracefully from the shoulder, are seen once more on many of the handsomest bridal gowns. Rich ivory satin is always preferred by the conventional bride, but white embroidered panne or chiffon velvet with a court train of satin is beautiful, trimmed with lace and worn with a long lace veil.

A soft satin silk may be more becoming than heavy satin, in which case the train may be of heavy satin or brocade. A hat bordered with a deep band of lace gives much the same effect as a lace veil and is preferred by many as being more possible to arrange becomingly. If the flat arrangement of the veil on the hair that is so much in vogue at present is not becoming, a wreath or cluster of orange blossoms will give the necessary height if placed like a coronet or tiara in the hair.

The average bride would as soon dispense with the Lohengrin or Mendelssohn marches as she would be married without a spray of orange blossoms on her gown or in her bouquet. Unfortunately, the natural orange flower is too perishable to even form a bouquet, but real flowers can be combined with the artificial variety for trimming on the gown or veil and can help to make up an attractive bouquet with lilies of the valley, gardenias, orchids or whatever white flower is carried. Care must be taken that orange blossoms are purchased, not lemon flowers, which look so nearly the same and which grow so much more luxuriantly and are, consequently, far less expensive.

BAG FOR THE JEWELRY.

Convenient Little Receptacle—Easy to Put Together.

Jewelry, if left lying about on a dressing-table, is always liable to get tarnished or mislaid, and it is a great convenience to have some little receptacle for it, into which it may be easily placed. We therefore give a design for a small bag lined with

wash-leather for hanging at the side of a looking-glass. It can be made out of any small piece of silk, satin or brocade in the shape shown in the sketch, stitched at the edge to give it greater firmness, and embroidered either in a floral design, or with the initials of the owner. The flap which turns over is edged with buttonhole-stitching worked in thick silk, and the bag is finished with ribbon bows and a long loop of ribbon by which it may be hung up. Such a bag as this might hold a good number of brooches, rings and bracelets.